

seen in Jamaica to produce that halo, and as often as not the halo is cut by the parhelic ring, producing two bright patches showing colored light on either side of the sun.

Parhelia may also be similarly formed with the halo ring of 46° ; but parhelia formed with the halo ring of 90° have been seen only on a few occasions since the year 1663 when Hevelius, the astronomer, saw the phenomenon at Danzig; his drawing is reproduced in the Observer's Handbook, issued by the Meteorological Office, London.

Loomis in his Treatise on Meteorology, published in 1885, says that only three observations of this halo are on record, and that its exact dimensions have not been well determined.

No attempt was made on April 10 to measure anything, but there can be no doubt that the mock suns due to this halo and the parhelic ring were seen. Mr. Henderson wrote the same day to the Daily Gleaner, and to me on the 16th, and a few letters have been exchanged to settle the facts.

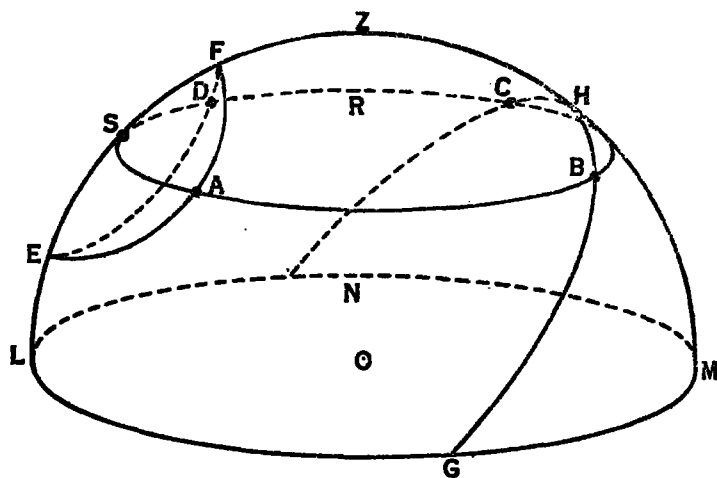


FIG. 1.—Perspective view of optical phenomenon at Browns Town, Jamaica, April 10, 1917.

At Browns Town there was much thin cirro-stratus about, indeed the sky seems to have been covered with it except to the north: the sun shone through it surrounded by a coronal ring of about 10° radius, and by the halo ring of 22° radius, both showing prismatic colors; the mock suns on either side of the sun, and at the same altitude as the sun, were almost of the same size and brilliancy as the sun itself.

As the sun was then nearly above the eastern point of the horizon, one of these mock-suns was about ENE. and the other ESE; the latter had a broad band of light extending about 10° along the parhelic ring, and away from the sun.

Following on round the horizon there was another mock sun in the SW and another in the NW, but these were both much fainter than the two towards the east. They were all about the same altitude above the horizon.

This unusual display lasted about half an hour, when a heavy cumulus cloud blotted it out.

In figure 1 O is the place of the observer and L G M N his horizontal plane; S is the sun, E A F D the halo ring of 22° radius and G B H C the halo ring of 90° radius; and S A B C D the parhelic or mock-sun ring; A and D are the two bright mock suns toward the east, and B and C are the two faint mock suns toward the west.

Now the latitude of the place is $18^\circ 24' N$, the declination of the sun was $7^\circ 52' N$, and the hour angle was about 50° ; hence the azimuth of the sun was 85° from N

toward E, the azimuth of B was 50° from N toward W, and the azimuth of C was 40° from S toward W; the latter azimuths agreeing with the observed positions NW and SW as nearly as could have been expected.

MAGNETIC STORM OF AUGUST 26-27, 1916.¹

By W. E. W. JACKSON.

[Reprinted from Science Abstracts, Sect. A, June 25, 1917, §553.]

An analysis is made of the magnetic records at Sitka, Meanook, Agincourt, Cheltenham, Tucson, and Honolulu during the occurrence of the aurora and magnetic storm of August 26-27, 1916.

The beginning of the disturbance was very abrupt in H and D at all the stations, and from later comparisons with the records at Eskdalemuir it is evident that the effect occurred practically simultaneously all the world over. —C. P. B[uller].

The Weather Bureau report on the aurora borealis of August 26-27, 1916, was published in this REVIEW, August, 1916, 44:440 and following.—C. A. jr.

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COMPARISON OF CALLNDAR SUNSHINE RECORDER AND ÅNGSTRÖM PYRHELIOMETER.²

By J. PATTERSON.

[Reprinted from Science Abstracts, Sect. A, July 30, 1917, §584.]

Comparative readings were taken with (a) a normal Ångström pyrheliometer, (b) a similar instrument having the receiver covered with a glass bulb of the type used in the Callendar, and (c) a Callendar recorder. The results from one day's readings are shown graphically. These are typical of all days. The normal Ångström gives the highest readings. The shielded Ångström gives about 10 per cent lower throughout most of the day, but toward sunset this percentage error decreases. The Callendar recorder gives close agreement with the shielded Ångström in the morning, but during the afternoon the readings increase relatively and toward evening exceed those of the normal Ångström. In these experiments the Callendar was mounted normal to the incident sunlight and shielded from sky radiation. The comparisons which have been made with the Callendar show the desirability of standardizing its readings by laboratory investigation.—J. S. Di[n]es].

NOTE BY PROF. H. H. KIMBALL.

In connection with the observed afternoon excess of the shielded Ångström over the normal Ångström, one is reminded of Prof. Kimball's experience³ to the effect that the Callendar instrument deprived of its glass screen read higher when the sun was low than when it was high. Further that the glass-screened Callendar read higher with a high morning sun than with a high afternoon sun.

Experiments also showed (loc. cit. Table 3) that with diminished intensity of solar radiation—artificially secured by means of a whirling sectored screen—the ratio of the Callendar instrument to the Marvin, increased.

All these experiences are in harmony with Patterson's results.

¹ Jour. Roy. Astron. Soc. Canada, Toronto, January, 1917, 11:17-22.

² Trans. Roy. Soc. Canada, Sept. 1916, 10:51-55.

³ Kimball, H. H., in this REVIEW, August, 1914, 42:475.